

BIOTIC COMMUNITY

FISH COMMUNITY DATA

The fishes of the St. Francis River basin have been sampled extensively with seines since the 1930s and electrofishing equipment since the 1980s. Seining data are available from 56 sites in the upper subbasin and 33 sites in the lower subbasin. Electrofishing data has been collected from 13 sites in the upper subbasin and nine sites in the lower subbasin.

Seine samples provide the qualitative and quantitative indicators that can best define fish communities. Electrofishing samples, using boat-mounted equipment, mostly emphasized the collection of species which could have some angling value. No attempt was made to collect nektonic or benthic fish species by electrofishing.

A total of 130 species representing 20 families have been collected by all methods from the St. Francis basin. The families and number of species are: Cyprinidae (38 species), Percidae (25 species), Catostomidae (16 species), Centrarchidae (15 species), Ictaluridae (11 species), Fundulidae (4 species), Lepisosteidae (3 species), Clupeidae (3 species), Petromyzontidae (2 species), Esocidae (2 species), Hiodontidae (2 species), and Moronidae, Elasmobranchidae, Cottidae, Poeciliidae, Atherinidae, Aphridoderidae, Amiidae, Anguillidae, and Sciaenidae (one species each).

Further discussions of the fish communities will be separated by subbasin because the upper subbasin is within the Ozark Faunal Region and the lower subbasin is within the Lowland Faunal Region, which includes the Crowley's Ridge creeks (Pflieger 1997).

Upper Subbasin

A total of 106 fish species representing 16 families have been collected by seining in the subbasin (Table 1). The central stoneroller and longear sunfish were the most widely distributed species, occurring at 86 and 82 percent of the sample sites, respectively (Table 1). Thirteen other species were encountered from at least 50 percent of the sites: largescale stoneroller, striped shiner, bigeye shiner, bluntnose minnow, creek chubsucker, northern hogsucker, northern studfish, blackspotted topminnow, green sunfish, bluegill, rainbow darter, striped fantail darter, and orangethroat darter.

A total of 31 species that were found in the subbasin prior to 1971 have not been collected since then (Table 2). However, this is probably because the sites where those species were found have been sampled very little or not at all since 1976.

In addition, 14 species typically found in the lower subbasin (longnose gar, shortnose gar, blacktail shiner, common carp, Mississippi silvery minnow, ribbon shiner, weed shiner, suckermouth minnow, smallmouth buffalo, bigmouth buffalo, orangespotted sunfish, western sand darter, crystal darter, and drum) have not been collected since the construction of

Wappapello Lake. The construction of Wappapello Lake probably eliminated the most suitable habitat for these species in the upper subbasin (Pflieger 1997). Eight species (common carp, silver redhorse, shorthead redhorse, channel catfish, chain pickerel, white bass, walleye, and drum) have been sampled by electrofishing since 1976, but not by seining (Table 3).

Since 1978, 32 species in 12 families have been collected with boat electrofishing (Table 3). Longear sunfish, gizzard shad, and golden redhorse were the most abundant species. Overall, largemouth bass and spotted bass were more abundant than smallmouth bass, which were found mainly in the shut-ins and riffles. The exception is Big Creek, where smallmouth bass dominate the black bass community.

Lower Subbasin

Ninety-two fish species from 18 families have been collected by seining in the subbasin (Table 1). Bluegill, blackspotted topminnow, mosquitofish, gizzard shad, and largemouth bass were the most widely distributed species, occurring at 73-85 percent of the sample sites (Table 1). Eight other species have been collected from at least 50 percent of the sample sites (*i.e.* blacktail shiner, pirate perch, brook silverside, warmouth, orangespotted sunfish, longear sunfish, spotted bass, and bluntnose darter).

Twenty species previously collected from the subbasin have not been collected by seining since 1976 (Table 2). However, this is probably because the sites where those species were found have been sampled very little or not at all since 1976. The construction of Wappapello Lake probably eliminated the most suitable habitat for some of these species in the lower subbasin. Twelve species (bowfin, American eel, skipjack herring, river carpsucker, lake chubsucker, smallmouth buffalo, bigmouth buffalo, black buffalo, golden redhorse, brown bullhead, and flathead catfish) have been collected by electrofishing since 1967, but were not collected by seining.

Forty one species in 14 families have been collected with boat electrofishing (Table 3). In the unchannelized reaches, bluegill, longear sunfish, gizzard shad, and smallmouth buffalo were the most common species. In the channelized section, the most abundant species were gizzard shad, common carp, smallmouth buffalo, and freshwater drum. Spotted bass were more abundant than largemouth bass. Grass carp and goldeye were collected by electrofishing, but not by seining, adding to the species list.

CREEL DATA

A state-wide angler survey (Weithman 1991) was conducted from 1983 to 1988 and is the only source of creel information for the basin (Table 4). Accurate estimates of total angler pressure, catch, and harvest cannot be made where the number of anglers interviewed is low. However raw survey data which partitions angler species preference, effort, success, and satisfaction can provide some data that describe angler utilization of the fishery resource. A total of 845 St. Francis River anglers were surveyed. Black bass and no species preference (anything) were the most common preferences, followed by sunfish and catfish. Catch and harvest rates were quite variable and led by suckers, frogs, sunfishes, drum, anything, and black bass. Sunfish and black

bass were the predominant species caught. The fishing quality rating ranged from 4 to 7 (10=Best) for most species, which is considered moderately good.

FISH STOCKING

A walleye restoration project began in 1996. Fingerlings (1-2") were released in May of each year from 1996-1999. A total of 196,098 walleye fingerlings were stocked between Highways 72 and 34. Adult walleye from the lower Black River were used as broodstock. A no-harvest regulation was implemented to protect the newly-stocked fish. On waters of Wappapello Lake and its tributaries, including the St. Francis River and its tributaries above Wappapello Dam, all walleye and sauger must be returned to the water unharmed immediately after being caught.

COMMERCIAL HARVEST

Commercial fishing is allowed in the part of the St. Francis River which forms a boundary between the states of Arkansas and Missouri. Regulations of the state where the fisher or musseler is licensed shall apply in the St. Francis River. Commercial fishing pressure is thought to be light.

FISH SPECIES OF CONSERVATION CONCERN

Since the settlement of Missouri, many species have declined to levels of concern and some have disappeared entirely (MDC 2000). Twenty-three fish species found in the St. Francis River basin are of particular concern due to population declines or apparent vulnerability from a statewide perspective. Each species is ranked from S1 (worst) to S5 according to their relative endangerment. The status of each of these species in the basin is discussed below.

Mooneye (State Rank–S3): Only two lower subbasin sites contained collections of mooneye. Pflieger (1997) noted that it has never been common in Missouri and may be declining.

Cypress Minnow (State Rank–S1): The only recent records of this species were from collections made 1979 and 1984 near the Ben Cash Conservation Area in the lower subbasin. Cypress minnows were relatively common more than 50 years ago (Pflieger 1997).

Mississippi Silvery Minnow (State Rank–S3S4): According to Pflieger (1997), this minnow is common in the lower St. Francis River, but has been extirpated above Wappapello Dam. This species has been collected as recently as 1994.

Pallid Shiner (Extirpated): Once common in the Lowlands, this species has declined, and is probably extirpated from Missouri (Pflieger 1997). Increased siltation associated with altered land use practices is the suspected cause of its decline.

Ironcolor Shiner (State Rank–S1): Distribution of this species is limited to the central part of the Southeastern Lowlands where it typically occurs as isolated, highly localized populations, but sometimes is quite abundant (Pflieger 1997). Many populations of ironcolor shiners no longer exist and their continued existence in Missouri is doubtful (Pflieger 1997).

Taillight Shiner (State Rank–S1): Pflieger (1997) describes this minnow as one of the rarest Missouri minnows and may soon be extirpated in the state. It has only been collected from two lower subbasin sites and was last collected in 1941.

Ozark Shiner (State Rank–S2): This species currently exists in the St. Francis basin only in Marble Creek in the upper subbasin (Pflieger 1997). The most recent collection was made in 1992.

Pugnose Minnow (State Rank–S4): Primarily a Lowland species in Missouri, this minnow may have increased in numbers in recent decades (Pflieger 1997). They seem to be widely distributed in the lower subbasin.

Eastern Slim Minnow (State Rank–S2S3): Reservoir construction is the suspected cause of the extirpation of this species from the St. Francis River basin (Pflieger 1997). It has been collected from three upper subbasin sites, but not since 1937.

Highfin Carpsucker (State Rank–S2): This species was collected from two sites above Wappapello Lake prior to 1957 and the site immediately below the dam in 1989. This carpsucker is rare in Missouri and may be more uncommon now than in the past (Pflieger 1997).

Blue Sucker (State Rank–S3): This species is fairly common in the lower subbasin.

Lake Chubsucker (State Rank–S2): Lake chubsuckers have been collected in several tributaries to the lower St. Francis River. They are also fairly common in pool #1 on Duck Creek Conservation Area (DCCA). This sucker is restricted to the Lowland Faunal Region and is becoming increasingly rare and localized in occurrence and could become extirpated from Missouri if trends continue (Pflieger 1997).

Brown Bullhead (State Rank–S3): According to Pflieger (1997), the only confirmed self-sustaining populations in Missouri occur in pool #1 on DCCA and in Mingo National Wildlife Refuge (MNWR) in the lower subbasin. Brown bullheads are collected by electrofishing each year from Pool#1 on DCCA.

Mountain Madtom (State Rank–S1S2): This species is rare in Missouri and was collected only once from the St. Francis basin in 1997 in the upper subbasin.

Starhead Topminnow (State Rank–S2): DCCA and MNWR support the only known substantial population in Missouri. It seems to have disappeared from the remainder of its former locations (Pflieger 1997).

Flier (State Rank–S3): This species has been collected from ditches in DCCA, MNWR, and from the Wilhelmina Cutoff. Fliers occur almost exclusively in the Lowlands and are naturally uncommon and sporadic in distribution (Pflieger 1997).

Bantam Sunfish (State Rank–S2): DCCA and MNWR support the only populations of this species in Missouri (Pflieger 1997).

Western Sand Darter (State Rank–S2S3): This species has been collected from five sites in the lower subbasin, as recently as 1995. It has also been collected from one site in the upper subbasin. Pflieger (1997) noted that it is common in the Lowland ditches, but not abundant anywhere in Missouri, and may be declining in numbers.

Scaly Sand Darter (State Rank–S3): This species has been collected from both subbasins, most recently from the lower subbasin in 1995 and the upper subbasin in 1992. The scaly sand darter is primarily a Lowland species and has apparently declined in recent decades (Pflieger 1997).

Crystal Darter (State Rank–S1): Although never common, this darter was found in drainages of the Lowlands, including the St. Francis River (Pflieger 1997). This species has been collected from five sites in the lower subbasin and two sites in the upper subbasin, but not since 1964. Pflieger (1997) adds that the species is probably gone from the St. Francis basin and its presence in other basins is in doubt.

Harlequin Darter (State Rank–S2): This Lowland species is one of the rarest darters in Missouri. It was collected from five locations in the lower St. Francis River and from the Wilhelmina Cutoff when these sites were last sampled in 1979.

Longnose Darter (State Rank–S1): Pflieger (1997) believes this species still exists in the upper St. Francis River, but is rare. It was collected from only two sites from the upper river in--1957 and 1970.

River Darter (State Rank–S3): Although most abundant in the Mississippi River, this darter is common in large ditches and streams in the Lowlands (Pflieger 1997). It has been collected from six sites in the lower subbasin.

FEDERAL AND STATE LISTED SPECIES

No federally listed fish species exist in the basin. However, four species (blue sucker, Ozark shiner, crystal darter, and longnose darter) have been collected from the basin that were formerly included on the federal list as C2–Candidate for listing. MDC lists one fish species as extirpated, the pallid shiner. Six species (cypress minnow, taillight shiner, mountain madtom, crystal darter, harlequin darter, and longnose darter) are listed as state Endangered. See the ‘Fish Species of Conservation Concern’ section for a brief status of these species in the basin.

No federally listed mussel species have been found in the basin. However, six species have been collected that were formerly included on the federal list as C2. These species include the elktote, western fanshell, snuffbox, Ouachita kidneyshell, rabbitsfoot, and little purple. The western fanshell is considered endangered by MDC (MDC 2000). No state or federally listed crayfish have been collected from the basin.

INVERTEBRATE COMMUNITY

Benthic invertebrates are important to aquatic ecosystems because they are prey for many species of fish, mammals, and other invertebrates. They are also indicators of good water quality because many species cannot tolerate poor conditions. Therefore, the number of invertebrate taxa may indicate the quality of the water within a particular stream. Table 5 lists the number of taxa collected in several basin streams. Most of these streams support a diverse invertebrate fauna, indicating good water quality and habitat. It is unknown why Brewer Creek and Scroggin Branch support fewer invertebrate taxa.

Freshwater mussels are common in the basin according to Bates and Dennis (1983), Oesch (1984), Buchanan (1996), and Roberts et al. (1997). Forty-eight mussel species have been identified from the basin (Table 6). The majority have been found in the mainstem, but many tributaries support mussels. According to Buchanan (1996) no naiades were collected from Big, Twelvemile, or Otter creeks.

Mussels are also excellent environmental indicators. Many mussel species are declining nationwide. Therefore, the presence of a diverse mussel community may indicate stable conditions, low siltation, and good water quality and habitat. Eleven mussel species are listed in the Missouri Species of Conservation Concern Checklist (MDC 2000). These include the elktote, flat floater, rock pocketbook, western fanshell, snuffbox, black sandshell, southern hickorynut, bankclimber, Ouachita kidneyshell, rabbitsfoot, and little purple (Table 6). These are of particular concern due to population declines or apparent vulnerability from a statewide perspective (MDC 2000). Each species is ranked from S1 (most endangered) to S5 according to their relative endangerment.

Sixteen crayfish species have been collected, including the Big Creek and St. Francis River crayfishes, which are endemic to the upper subbasin (Table 7) (Pflieger 1996). The woodland crayfish (*Orconectes hylas*) is an introduced species and may be a cause for concern. The St. Francis River crayfish was once abundant in Stouts Creek, but has been replaced by the woodland crayfish above Lake Killarney. The woodland crayfish has also been found in Big Creek. The belted crayfish may also be an introduced species. It is endemic to the Big and Meramec River drainages, but three specimens were collected from the St. Francis River in 1987. Six crayfish species (vernal, Cajun dwarf, Shufeldt's dwarf, shrimp, St. Francis River, Big Creek crayfishes) are listed in the Missouri Species of Conservation Concern Checklist (MDC 2000). They are of particular concern due to population declines or apparent vulnerability from a statewide perspective. Each species is ranked from S1 to S5 according to their relative endangerment.

Table 1. Percent of sites in each subbasin where a species was collected (Data from seine samples).

Family/Species	Common Name	Percent	
		Upper Subbasin	Lower Subbasin
PETROMYZONTIDAE <i>Ichthyomyzon castaneus</i> <i>Lampetra aepyptera</i>	LAMPREYS Chestnut lamprey Least brook lamprey	2 5	
LEPISOSTEIDAE <i>Lepisosteus oculatus</i> <i>L. osseus</i> <i>L. platostomus</i>	GARS Spotted gar Longnose gar Shortnose gar	 7 2	18 27 27
AMIIDAE <i>Amia calva</i>	BOWFINS Bowfin		12
HIODONTIDAE <i>Hiodon tergisus</i>	MOONEYES Mooneye		6
ANGUILLIDAE <i>Anguilla rostrata</i>	FRESHWATER EELS American eel		6
CLUPEIDAE <i>Alosa chrysochloris</i> <i>Dorosoma cepedianum</i> <i>D. petenense</i>	HERRINGS Skipjack herring Gizzard shad Threadfin shad	11	3 73 3

Table 1. continued.

CYPRINIDAE	MINNOWS		
<i>Campostoma pullum</i>	Central stoneroller	86	
<i>C. oligolepis</i>	Largescale stoneroller	66	
<i>Cyprinella galactura</i>	Whitetail shiner	18	
<i>C. venusta</i>	Blacktail shiner	20	61
<i>C. whipplei</i>	Steelcolor shiner	39	15
<i>Cyprinus carpio</i>	Common carp	9	21
<i>Erimystax harryi</i>	Ozark chub	16	
<i>Hybognathus hayi</i>	Cypress minnow		24
<i>H. nuchalis</i>	Miss. silvery minnow	16	21
<i>Luxilus chrysocephalus</i>	Striped shiner	63	6
<i>L. zonatus</i>	Bleeding shiner	43	
<i>Lythrurus umbratilis</i>	E. Redfin shiner	27	30
<i>cianocephalus</i>	Ribbon shiner	4	36
<i>L. fumeus</i>	Hornyhead chub	25	
<i>Nocomis biguttatus</i>	Golden shiner	13	42
<i>Notemigonus crysoleucas</i>	Bigeye chub	32	
<i>Notropis amblops</i>	Pallid shiner		12
<i>N. amnis</i>	Emerald shiner	11	30
<i>N. atherinoides</i>	Bigeye shiner	59	
<i>N. boops</i>	Silverjaw minnow	5	
<i>N. buccatus</i>	Ironcolor shiner		12
<i>N. chalybaeus</i>	Wedgespot shiner	21	
<i>N. greeniei</i>	Taillight shiner		6
<i>N. maculatus</i>	Ozark minnow	30	
<i>N. nubilus</i>	Ozark shiner	7	
<i>N. ozarcanus</i>	Rosyface shiner	34	
<i>N. rubellus</i>	Telescope shiner	36	
<i>N. telescopus</i>	Weed shiner	2	30
<i>N. texanus</i>	N. E. mimic shiner	4	24
<i>N. v. volucellus</i>	Pugnose minnow	4	45
<i>Opsopoeodus emiliae</i>	Suckermouth minnow	2	6
<i>Phenacobius mirabilis</i>	S. redbelly dace	14	
<i>Phoxinus erythrogaster</i>	Bluntnose minnow	63	39
<i>Pimephales notatus</i>	Fathead minnow	2	
<i>P. promelas</i>	E. slim minnow	5	
<i>P. tenellus parviceps</i>	Bullhead minnow	5	48
<i>P. vigilax</i>	Creek chub	36	9
<i>Semotilus atromaculatus</i>			

Table 1. continued.

CATOSTOMIDAE	SUCKERS		
<i>Carpiodes carpio</i>	River carpsucker	2	3
<i>C. cyprinus</i>	Quillback	4	
<i>C. velifer</i>	Highfin carpsucker	4	
<i>Cycleptus elongatus</i>	Blue sucker		6
<i>Erimyzon oblongus</i>	Creek chubsucker	52	9
<i>E. sucetta</i>	Lake chubsucker		15
<i>Hypentelium nigricans</i>	Northern hogsucker	57	
<i>Ictiobus bubalus</i>	Smallmouth buffalo	2	9
<i>I. cyprinellus</i>	Bigmouth buffalo	5	9
<i>I. niger</i>	Black buffalo		3
<i>Minytrema melanops</i>	Spotted sucker	7	27
<i>Moxostoma anisurum</i>	Silver redhorse	5	
<i>M. carinatum</i>	River redhorse	5	
<i>M. duquesnei</i>	Black redhouse	34	
<i>M. erythrurum</i>	Golden redhorse	32	9
<i>M. macrolepidotum</i>	Shorthead redhorse	4	12
ICTALURIDAE	CATFISHES		
<i>Ameiurus melas</i>	Black bullhead	14	24
<i>A. natalis</i>	Yellow bullhead	27	21
<i>A. nebulosus</i>	Brown bullhead		6
<i>Ictalurus punctatus</i>	Channel catfish	7	39
<i>Noturus albater</i>	Ozark madtom	13	
<i>N. eleutherus</i>	Mountain madtom	2	
<i>N. exilis</i>	Slender madtom	5	
<i>N. gyrinus</i>	Tadpole madtom	2	30
<i>N. miurus</i>	Brindled madtom	7	21
<i>N. nocturnus</i>	Freckled madtom	2	15
<i>Pylodictis olivaris</i>	Flathead catfish	4	18
ESOCIDAE	PIKES		
<i>Esox americanus</i>	Grass pickerel	20	21
<i>E. niger</i>	Chain pickerel	4	18
APHREDODERIDAE	PIRATE PERCHES		
<i>Aphredoderus sayanus</i>	Pirate perch	5	55
FUNDULIDAE	KILLFISHES		
<i>Fundulus catenatus</i>	Northern studfish	55	
<i>F. notatus</i>	Blackstripe topminnow	7	27
<i>F. dispar</i>	Starhead topminnow		27
<i>F. olivaceus</i>	Blackspotted topminnow	70	79
POECILLIIDAE	LIVE BEARERS		
<i>Gambusia affinis</i>	Mosquitofish	13	76

Table 1. continued.

ATHERINIDAE <i>Labidesthes sicculus</i>	SILVERSIDES Brook silversides	39	58
COTTIDAE <i>Cottus carolinae</i>	SCULPINS Banded sculpin	20	
MORONIDAE <i>Morone chrysops</i>	TEMPERATE BASSES White bass	2	15
ELASSOMATIDAE <i>Elassoma zonatum</i>	PYGMY SUNFISHES Banded pygmy sunfish		27
CENTRARCHIDAE <i>Ambloplites ariommus</i> <i>Centrarchus macropterus</i> <i>Lepomis cyanellus</i> <i>L. gulosus</i> <i>L. humilis</i> <i>L. macrochirus</i> <i>L. megalotis</i> <i>L. microlophus</i> <i>L. miniatus</i> <i>L. symmetricus</i> <i>Micropterus dolomieu</i> <i>M. punctulatus</i> <i>M. salmoides</i> <i>Pomoxis annularis</i> <i>P. nigromaculatus</i>	SUNFISHES Shadow bass Flier Green sunfish Warmouth Orangespotted sunfish Bluegill Longear sunfish Redear sunfish Redspotted sunfish Bantam sunfish Smallmouth bass Spotted bass Largemouth bass White crappie Black crappie	34 71 13 9 57 82 5 11 46 43 34 7 11	12 18 36 52 61 85 67 3 27 12 3 52 73 45 39

Table 1. continued.

PERCIDAE	PERCHES		
<i>Ammocrypta clara</i>	Western sand darter	2	18
<i>A. vivax</i>	Scaly sand darter	14	15
<i>Crystallaria asprella</i>	Crystal darter	4	18
<i>Etheostoma asprigene</i>	Mud darter		18
<i>E. blennioides</i>	Greenside darter	41	
<i>E. caeruleum</i>	Rainbow darter	70	
<i>E. chlorosomum</i>	Bluntnose darter	2	58
<i>E. flabellare lineolatum</i>	Striped fantail darter	50	3
<i>E. gracile</i>	Slough darter		36
<i>E. histrio</i>	Harlequin darter		21
<i>E. nigrum</i>	Johnny darter	4	3
<i>E. proeliare</i>	Cypress darter	4	30
<i>E. s. spectabile</i>	N.E. Orangethroat darter	50	6
<i>E. stigmaeum</i>	Speckled darter	11	18
<i>E. zonale</i>	Banded darter	25	3
<i>Percina c. caprodes</i>	Ohio logperch	25	9
<i>P. evides</i>	Gilt darter	16	3
<i>P. maculata</i>	Blackside darter	7	30
<i>P. nasuta</i>	Longnose darter	4	
<i>P. phoxocephala</i>	Slenderhead darter	2	
<i>P. sciera</i>	Dusky darter	7	36
<i>P. shumardi</i>	River darter		15
<i>P. vigil</i>	Saddleback darter	4	9
<i>Stizostedion canadense</i>	Sauger	2	
<i>S. vitreum</i>	Walleye	4	
SCIAENIDAE	DRUMS		
<i>Aplodinotus grunniens</i>	Freshwater drum	4	18

Table 2. Fish species collected by seining in three time periods (A= 1930-1941, B=1947-1971 and C=1976-1996).

Family/Species	Common Name	Upper Subbasin			Lower Subbasin		
		A	B	C	A	B	C
PETROMYZONTIDAE <i>Ichthyomyzon castaneus</i> <i>Lampetra aepyptera</i>	LAMPREYS Chestnut lamprey Least brook lamprey		X X	X			
LEPISOSTEIDAE <i>Lepisosteus oculatus</i> <i>L. osseus</i> <i>L. platostomus</i>	GARS Spotted gar Longnose gar Shortnose gar					X X X	X X X
AMIIDAE <i>Amia calva</i>	BOWFINS Bowfin					X	
HIODONTIDAE <i>Hiodon tergisus</i>	MOONEYES Mooneye					X	
ANGUILLIDAE <i>Anguilla rostrata</i>	FRESHWATER EELS American eel					X	
CLUPEIDAE <i>Alosa chrysochloris</i> <i>Dorosoma cepedianum</i> <i>D. petenense</i>	HERRINGS Skipjack herring Gizzard shad Threadfin shad	X	X	X	X X	X X	X X

Table 2. continued.

CYPRINIDAE	MINNOWS						
<i>Campostoma pullum</i>	Central stoneroller	X	X	X			
<i>C. oligolepis</i>	Largescale stoneroller	X	X	X			
<i>Cyprinella galactura</i>	Whitetail shiner	X	X	X			
<i>C. venusta</i>	Blacktail shiner	X	X		X	X	X
<i>C. whipplei</i>	Steelcolor shiner	X	X	X	X	X	
<i>Cyprinus carpio</i>	Common carp	X	X		X	X	X
<i>Erimystax harryi</i>	Ozark chub	X	X	X			
<i>Hybognathus hayi</i>	Cypress minnow				X		X
<i>H. nuchalis</i>	Miss. silvery minnow	X	X		X	X	X
<i>Luxilus chrysocephalus</i>	Striped shiner	X	X	X			X
<i>L. zonatus</i>	Bleeding shiner	X	X	X			
<i>Lythrurus umbratilis cyanocephalus</i>	E. Redfin shiner	X	X	X	X	X	X
<i>L. fumeus</i>	Ribbon shiner	X	X		X	X	X
<i>Nocomis biguttatus</i>	Hornyhead chub	X	X	X			
<i>Notemigonus crysoleucas</i>	Golden shiner	X		X	X	X	X
<i>Notropis amblops</i>	Bigeye chub	X	X	X			
<i>N. amnis</i>	Pallid shiner				X	X	
<i>N. atherinoides</i>	Emerald shiner	X	X	X		X	X
<i>N. boops</i>	Bigeye shiner	X	X	X			
<i>N. buccatus</i>	Silverjaw minnow	X		X			
<i>N. chalybaeus</i>	Ironcolor shiner					X	X
<i>N. greenei</i>	Wedgespot shiner	X	X	X			
<i>N. maculatus</i>	Taillight shiner				X		
<i>N. nubilus</i>	Ozark minnow	X	X	X			
<i>N. ozarcanus</i>	Ozark shiner	X	X	X			
<i>N. rubellus</i>	Rosyface shiner	X	X	X			
<i>N. telescopus</i>	Telescope shiner	X	X	X			
<i>N. texanus</i>	Weed shiner		X			X	X
<i>N. v. volucellus</i>	N. E. mimic shiner			X	X		X
<i>Opsopoeodus emiliae</i>	Pugnose minnow	X		X	X	X	X
<i>Phenacobius mirabilis</i>	Suckermouth minnow	X				X	X
<i>Phoxinus erythrogaster</i>	S. redbelly dace	X	X	X			
<i>Pimephales notatus</i>	Bluntnose minnow	X	X	X	X	X	X
<i>P. promelas</i>	Fathead minnow		X				
<i>P. tenellus parviceps</i>	E. slim minnow	X					
<i>P. vigilax</i>	Bullhead minnow	X		X	X	X	X
<i>Semotilus atromaculatus</i>	Creek chub	X	X	X		X	X

Table 2. continued.

CATOSTOMIDAE	SUCKERS						
<i>Carpiodes carpio</i>	River carpsucker		X			X	
<i>C. cyprinus</i>	Quillback		X	X			
<i>C. velifer</i>	Highfin carpsucker	X	X				
<i>Cycleptus elongatus</i>	Blue sucker					X	X
<i>Erimyzon oblongus</i>	Creek chubsucker	X	X	X		X	X
<i>E. sucetta</i>	Lake chubsucker				X	X	
<i>Hypentelium nigricans</i>	Northern hogsucker	X	X	X			
<i>Ictiobus bubalus</i>	Smallmouth buffalo		X			X	
<i>I. cyprinellus</i>	Bigmouth buffalo	X	X		X	X	
<i>I. niger</i>	Black buffalo					X	
<i>Minytrema melanops</i>	Spotted sucker		X	X	X	X	X
<i>Moxostoma anisurum</i>	Silver redhorse	X	X				
<i>M. carinatum</i>	River redhorse	X	X				
<i>M. duquesnei</i>	Black redhouse	X	X	X			
<i>M. erythrum</i>	Golden redhorse	X	X	X	X	X	
<i>M. macrolepidotum</i>	Shorthead redhorse	X	X		X	X	X
ICTALURIDAE	CATFISHES						
<i>Ameiurus melas</i>	Black bullhead	X	X	X	X	X	X
<i>A. natalis</i>	Yellow bullhead	X	X	X	X	X	X
<i>A. nebulosus</i>	Brown bullhead					X	
<i>Ictalurus punctatus</i>	Channel catfish	X	X		X	X	X
<i>Noturus albater</i>	Ozark madtom		X	X			
<i>N. eleutherus</i>	Mountain madtom			X			
<i>N. exilis</i>	Slender madtom		X				
<i>N. gyrinus</i>	Tadpole madtom			X	X	X	X
<i>N. miurus</i>	Brindled madtom	X	X	X	X	X	X
<i>N. nocturnus</i>	Freckled madtom	X				X	X
<i>Pylodictis olivaris</i>	Flathead catfish		X	X	X	X	
ESOCIDAE	PIKES						
<i>Esox americanus</i>	Grass pickerel	X	X	X	X	X	X
<i>E. niger</i>	Chain pickerel	X			X	X	X
APHREDODERIDAE	PIRATE PERCHES						
<i>Aphredoderus sayanus</i>	Pirate perch	X	X	X	X	X	X
FUNDULIDAE	KILLFISHES						
<i>Fundulus catenatus</i>	Northern studfish	X	X	X			
<i>F. notatus</i>	Blackstripe topminnow		X	X	X	X	X
<i>F. dispar</i>	Starhead topminnow				X	X	X
<i>F. olivaceus</i>	Blackspotted topminnow	X	X	X	X	X	X
POECILLIIDAE	LIVE BEARERS						
<i>Gambusia affinis</i>	Mosquitofish	X		X	X	X	X

Table 2. continued.

ATHERINIDAE <i>Labidesthes sicculus</i>	SILVERSIDES Brook silversides	X	X	X	X	X	X
COTTIDAE <i>Cottus carolinae</i>	SCULPINS Banded sculpin	X	X	X			
MORONIDAE <i>Morone chrysops</i>	TEMPERATE BASSES White bass		X			X	X
ELASSOMATIDAE <i>Elassoma zonatum</i>	PYGMY SUNFISHES Banded pygmy sunfish					X	X
CENTRARCHIDAE <i>Ambloplites ariommus</i> <i>Centrarchus macropterus</i> <i>Lepomis cyanellus</i> <i>L. gulosus</i> <i>L. humilis</i> <i>L. macrochirus</i> <i>L. megalotis</i> <i>L. microlophus</i> <i>L. miniatus</i> <i>L. symmetricus</i> <i>Micropterus dolomieu</i> <i>M. punctulatus</i> <i>M. salmoides</i> <i>Pomoxis annularis</i> <i>P. nigromaculatus</i>	SUNFISHES Shadow bass Flier Green sunfish Warmouth Orangespotted sunfish Bluegill Longear sunfish Redear sunfish Redspotted sunfish Bantam sunfish Smallmouth bass Spotted bass Largemouth bass White crappie Black crappie	X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X

Table 2. continued.

PERCIDAE	PERCHES						
<i>Ammocrypta clara</i>	Western sand darter		X		X		X
<i>A. vivax</i>	Scaly sand darter	X	X	X	X	X	X
<i>Crystallaria asprella</i>	Crystal darter	X	X		X	X	
<i>Etheostoma asprigene</i>	Mud darter				X	X	X
<i>E. blennioides</i>	Greenside darter	X	X	X			
<i>E. caeruleum</i>	Rainbow darter	X	X	X			
<i>E. chlorosomum</i>	Bluntnose darter			X	X	X	X
<i>E. flabellare lineolatum</i>	Striped fantail darter	X	X	X			X
<i>E. gracile</i>	Slough darter				X	X	X
<i>E. histrio</i>	Harlequin darter				X	X	X
<i>E. nigrum</i>	Johnny darter	X		X			X
<i>E. proeliare</i>	Cypress darter			X	X	X	X
<i>E. s. spectabile</i>	N.E. Orangethroat darter	X	X	X		X	X
<i>E. stigmaeum</i>	Speckled darter	X	X	X	X	X	X
<i>E. zonale</i>	Banded darter	X	X	X		X	
<i>Percina c. caprodes</i>	Ohio logperch	X	X	X	X		X
<i>P. evides</i>	Gilt darter	X	X	X	X		
<i>P. maculata</i>	Blackside darter	X	X	X	X	X	X
<i>P. nasuta</i>	Longnose darter			X			
<i>P. phoxocephala</i>	Slenderhead darter			X			
<i>P. sciera</i>	Dusky darter	X	X	X	X	X	X
<i>P. shumardi</i>	River darter				X	X	X
<i>P. vigil</i>	Saddleback darter		X	X	X	X	
<i>Stizostedion canadense</i>	Sauger		X				
<i>S. vitreum</i>	Walleye		X				
SCIAENIDAE	DRUMS						
<i>Aplodinotus grunniens</i>	Freshwater drum		X		X	X	X

Table 3. Percent of the total number of fish collected by boat electrofishing in the St. Francis River basin (UNCH=unchannelized reach, CHAN=channelized reach).

Family/Species	Common Name	Upper Subbasin	Lower Subbasin	
			UNCH	CHAN
LEPISOSTEIDAE <i>Lepisosteus oculatus</i> <i>L. osseus</i> <i>L. platostomus</i>	GARS Spotted gar Longnose gar Shortnose gar	<1	3 1 5	2 3 9
AMIIDAE <i>Amia calva</i>	BOWFINS Bowfin		<1	<1
HIODONTIDAE <i>Hiodon alosoides</i>	MOONEYES Goldeye		<1	
ANGUILLIDAE <i>Anguilla rostrata</i>	FRESHWATER EELS American eel		<1	<1
CLUPEIDAE <i>Alosa chrysochloris</i> <i>Dorosoma cepedianum</i>	HERRINGS Skipjack herring Gizzard shad	14	<1 11	<1 17
CYPRINIDAE <i>Ctenopharyngodon idella</i> <i>Cyprinus carpio</i>	MINNOWS Grass carp Common carp	<1	<1 6	16
CATOSTOMIDAE <i>Carpiodes carpio</i> <i>C. cyprinus</i> <i>C. velifer</i> <i>Cycleptus elongatus</i> <i>Hypentelium nigricans</i> <i>Ictiobus bubalus</i> <i>I. cyprinellus</i> <i>I. niger</i> <i>Minytrema melanops</i> <i>Moxostoma carinatum</i> <i>M. duquesnei</i> <i>M. erythrurum</i> <i>M. macrolepidotum</i>	SUCKERS River carpsucker Quillback Highfin carpsucker Blue sucker Northern hogsucker Smallmouth buffalo Bigmouth buffalo Black buffalo Spotted sucker River redhorse Black redhouse Golden redhorse Shorthead redhorse	5 3 <1 1 12 <1	1 <1 <1 10 3 1 <1 <1 <1 1	4 1 <1 2 12 2 <1 3 1

Table 3. continued.

ICTALURIDAE <i>Ameiurus melas</i> <i>A. natalis</i> <i>Ictalurus punctatus</i> <i>Pylodictis olivaris</i>	CATFISHES Black bullhead Yellow bullhead Channel catfish Flathead catfish	<1 1 2 <1	 1 1	 5 2
ESOCIDAE <i>Esox americanus</i> <i>E. niger</i>	PIKES Grass pickerel Chain pickerel	<1 <1	<1 <1	
APHREDODERIDAE <i>Aphredoderus sayanus</i>	PIRATE PERCHES Pirate perch		<1	<1
COTTIDAE <i>Cottus carolinae</i>	SCULPINS Banded sculpin	<1		
MORONIDAE <i>Morone chrysops</i>	TEMPERATE BASSES White bass	<1	<1	1
CENTRARCHIDAE <i>Ambloplites ariommus</i> <i>Lepomis cyanellus</i> <i>L. gulosus</i> <i>L. humilis</i> <i>L. macrochirus</i> <i>L. megalotis</i> <i>L. microlophus</i> <i>L. miniatus</i> <i>Micropterus dolomieu</i> <i>M. punctulatus</i> <i>M. salmoides</i> <i>Pomoxis annularis</i> <i>P. nigromaculatus</i>	SUNFISHES Shadow bass Green sunfish Warmouth Orangespotted sunfish Bluegill Longear sunfish Redear sunfish Redspotted sunfish Smallmouth bass Spotted bass Largemouth bass White crappie Black crappie	4 3 <1 4 32 1 <1 4 6 6 1 <1	 1 1 <1 21 14 1 <1 9 5 3 1	 1 1 2 5 1 1 <1
PERCIDAE <i>Percina c. caprodes</i> <i>Stizostedion canadense</i> <i>S. vitreum</i>	PERCHES Ohio logperch Sauger Walleye	1 <1	<1	 <1
SCIAENIDAE <i>Aplodinotus grunniens</i>	DRUMS Freshwater drum	<1	2	12

Table 4. Summary of select creel parameters reported in the Missouri State-Wide Angler Survey (1983-1988) for the St. Francis River. Because of limited angler contacts (845 anglers surveyed during the 6-year period), data for all years were combined.

Species Preference	No. of Anglers	% of Anglers	% of Hours Fished	Catch Rate	Harvest Rate	Fishing Quality Rating (10=Best)	% of Total Catch
Anything	245	29	23	0.9	0.3	4.1	-
Black Bass	250	30	36	0.6	0.2	4.4	24
Sunfishes	156	19	12	1.2	0.7	5.6	59
Catfishes	149	18	23	0.1	0.1	4.7	8
Suckers	19	2	4	2.9	2.9	7.1	3
Walleye	4	1	<1	0.1	0.1	5.7	<1
Carp	4	1	1	0.3	0.3	5.0	1
Buffalo	4	1	1	0	0	5.0	<1
Shadow Bass	3	<1	<1	0.5	0.5	7.0	4
Drum	2	<1	<1	0.9	0.9	10.0	1
Frogs	9	1	1	2.2	2.2	7.4	1
Total	845	102	Wtd. Avg.	0.7	0.4	4.8	101

Table 5. Benthic invertebrate distribution in select streams in the St. Francis River basin.
(Source = MDC database)

Number of Taxa Collected								
Taxonomic Group	STF	BGC	LSTF	BRC	KNC	SBR	CCK	SAC
Platyhelminthes	1	1	1	1	1	0	2	1
Nematoda	1	1	1	0	1	0	1	1
Nematomorpha	1	1	1	0	1	0	0	1
Annelida	3	3	3	2	3	0	2	2
Crustacea	9	6	4	4	5	0	6	8
Plecoptera	17	39	14	13	11	0	29	19
Ephemeroptera	31	41	26	7	17	2	23	19
Odonata	7	15	11	3	10	5	6	9
Hemiptera	7	14	7	0	6	0	6	10
Megaloptera	2	4	3	2	2	1	2	3
Neuroptera	0	0	1	0	0	0	0	0
Trichoptera	17	46	20	9	19	5	32	32
Lepidoptera	1	1	2	0	1	0	2	0
Coleoptera	20	57	23	13	13	5	20	25
Diptera	17	24	29	8	17	7	15	32
Hymenoptera	0	0	0	0	0	0	0	0
Arachnoidea	1	1	1	0	1	0	1	1
Mollusca (excluding mussels)	11	9	8	3	6	0	4	5
Total	146	263	155	65	114	25	151	168

STF-St. Francis River

BGC-Big Creek

LSTF-Little St. Francis River

BRC-Brewer Creek

KNC-Knob Creek

SBR-Scroggin Branch

CAC-Carver Creek

SAC-Saline Creek

Table 6. Freshwater mussels of the St. Francis River basin.

Species	Common Name
<i>Alasmodonta marginata</i>	Elktoe
<i>A. viridis</i>	Slippershell
<i>Amblema plicata</i>	Threeridge
<i>Cyclonaias tuberculata</i>	Purple pimpleback
<i>Elliptio dilatata</i>	Spike
<i>Fusconaia flava</i> (=undata)	Wabash pig toe
<i>Megalonaias nervosa</i>	Washboard
<i>Obovaria jacksoniana</i>	Southern Hickorynut
<i>Pleurobema coccineum</i>	Round pigtoe
<i>Plectomerus dombeyana</i>	Bankclimber
<i>Ptychobranhus occidentalis</i>	Quachita kidney-shell
<i>Quadrula c. cylindrica</i>	Rabbitsfoot
<i>Q. metanevra</i>	Monkeyface
<i>Q. pustulosa</i>	Pimpleback
<i>Q. quadrula</i>	Mapleleaf
<i>Tritogonia verrucosa</i>	Pistolgrip
<i>Unionerus tetralasmus</i>	Pondhorn
<i>Anodonta grandis corpulenta</i>	Stout floater
<i>A. g. grandis</i>	Giant floater
<i>A. imbecillis</i>	Paper pondshell
<i>A. suborbiculata</i>	Flat floater
<i>Arcidens confragosus</i>	Rock pocketbook
<i>Lasmigona complanata</i>	White heelsplitter
<i>L. costata</i>	Fluted-shell

<i>Strophitus undulatus</i>	Squawfoot
<i>Actinonaias ligamentina</i>	Mucket
<i>Cyprogenia aberti</i>	Western fanshell
<i>Epioblasma triquetra</i>	Snuffbox
<i>Lampsilis brevicula</i>	Ozark broken-ray
<i>L. orbiculata</i>	Pink mucket
<i>L. ovata (=cardium)</i>	Pocketbook
<i>L. siliquoidea</i>	Fatmucket
<i>L. teres anodontoides</i>	Yellow sandshell
<i>L. t. teres</i>	Slough sandshell
<i>Leptodea fragilis</i>	Fragile papershell
<i>Ligumia recta</i>	Black sandshell
<i>L. subrostrata</i>	Pondmussel
<i>Obliquaria reflexa</i>	Threehorn wartyback
<i>Potamilus alatus</i>	Pink heelsplitter
<i>P. ohioensis</i>	Pink papershell
<i>P. purpurata</i>	Purple shell
<i>Toxolasma lividus glans</i>	Little purple
<i>T. parvus</i>	Lilliput
<i>Truncilla donaciformis</i>	Fawnsfoot
<i>T. truncata</i>	Deertoe
<i>Venustaconcha ellipsiformis</i>	Ellipse
<i>Villosa iris</i>	Rainbow
<i>V. lienosa</i>	Little spectaclecase

Table 7. Crayfishes of the St. Francis River basin.

Species	Common Name
<i>Procambarus clarkii</i>	Red swamp crayfish
<i>P. acutus</i>	White River crayfish
<i>P. viaeveridus</i>	Vernal crayfish
<i>Cambarellus puer</i>	Cajun dwarf crayfish
<i>C. shufeldtii</i>	Shufeldt's dwarf crayfish
<i>Cambarus diogenes</i>	Devil crayfish
<i>C. hubbsi</i>	Hubb's crayfish
<i>Orconectes lancifer</i>	Shrimp crayfish
<i>O. palmeri</i>	Gray-speckled crayfish
<i>O. harrisoni</i>	Belted crayfish
<i>O. luteus</i>	Golden crayfish
<i>O. virilis</i>	Northern crayfish
<i>O. punctimanus</i>	Spothanded crayfish
<i>O. quadruncus</i>	St. Francis River crayfish
<i>O. peruncus</i>	Big Creek crayfish
<i>O. hylas</i>	Woodland crayfish